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# I. INTRODUCTION

This is the eighth report of the Healing Arts Radiation Protection Commission to the Minister of Health, as required by Section 16(2) of the Healing Arts Radiation Protection (H.A.R.P.) Act, 1980. This report covers the commission's activities during the period April, 1988 to March, 1989.

## 1. ORIGIN OF THE H.A.R.P. ACT AND THE H.A.R.P. COMMISSION

In 1979, public concern regarding exposure to x-rays, lead the Minister of Health to establish an Advisory Committee on Radiology, with Dr. R.B. Holmes as Chairman. Included among this Committee's recommendations were the elements of the nev x-ray safety legislation, Bill 177. This legislation was passed in 1980 and became known as the Healing Arts Radiation Protection (H.A.R.P.) Act.

The purpose of the H.A.R.P. Act is to promote and ensure patient safety in the healing arts. The disciplines included under the Act are chiropractic medicine, dentistry, medical radiology, physics, podiatry and radiological technology. The H.A.R.P. Act emphasizes the protection of the patient since the safety of the staff is covered by other legislation.

Protection of the patient implies protection based on mechanical and electrical safety, as well as reducing health risks by minimizing the radiation exposure in every x-ray examination. There is, however, another aspect of patient safety that is of equal importance: if radiographs that fail to provide the required diagnostic information; this represents both wasted radiation exposure and the possibility of undetected life-threatening disease; this could pose a health hazard to the patient. Thus patient safety must be interpreted to mean the provision of a radiological image of good diagnostic quality, consistent with minimum radiation exposure.

The Act provides for the development of Regulations, intended to promote the safe use of x-rays in the healing arts. The general legal framework established by the H.A.R.P. Act and the Regulations under the Act are as follows:

i) registration and approval of installation of x-ray facilities and equipment;

ii) definition of the classes of person who may prescribe an x-ray examination of a human subject;

iii) definition of the classes of person who may operate x-ray equipment for the purposes of irradiating a human;

iv) appointment by the owner of an x-ray facility of a Radiation Protection Officer (R.P.O.) charged with ensuring that every x-ray machine is maintained in a safe operating condition and with "such other matters" (relating to x-ray safety) "as are prescribed by the Regulations";

v) provision of legal powers to the Director of X-ray Safety (appointed by the Minister) to prevent the unsafe use of x-rays;

vi) establishment of the Healing Arts Radiation Protection Commission to advise the Minister on matters relating to x-ray health and safety, approve training courses for all personnel involved in the use of x-rays, examine such matters as x-ray screening programs and to develop x-ray safety regulations;

vii) establishment of Advisory Committees consisting of representatives from each of the healing arts regulated by the Act as well as radiological technologists and medical physicists to advise the Commission.

The Regulations, promulgated in 1985, take the form of an X-ray Safety Code in which both the standards for equipment performance and the duties of the Radiation Protection Officer are defined.

## 2. THE ALARA PRINCIPLE IN X-RAY DIAGNOSIS

The International Commission on Radiation Protection (I.C.R.P.) developed an approach known as the ALARA principle which specifies safe use of ionizing radiation. This operating principle in radiation safety specifies that:

- all x-ray exposures to individuals should be kept "As Lov As Reasonably Achievable" (ALARA), economic and social factors being taken into account; that is, the procedure must be optimized to reduce the hazard to the patient;

- no x-ray procedure shall be adopted unless its introduction produces a positive net benefit; that is, the examination must be justified;

- the dose to individuals shall not exceed the limits recommended by the H.A.R.P. Commission for the appropriate circumstances; that, is recognized exposure limits must not be exceeded during the course of the examination.

## 3. THE COMMISSION'S MISSION STATEMENT

The Commission's mission is to promote patient safety in the use of radiation within the healing arts.

## 4. THE COMMISSION'S OPERATIONAL PHILOSOPHY

The Commission has adopted the following operational philosophy:

> The Commission seeks to create a cooperative environment that permits positive changes within the health care system for the benefit of the patient.

## II. DUTIES OF THE COMMISSION

The Commission was established to:

a) advise the Minister on all matters relating to the health and safety of patients in respect of irradiation by x-rays;

b) oversee the continuing development of an X-ray Safety Code;

c) review the contents of courses in the operation of x-ray machines and x-ray equipment and approve the courses it considers satisfactory;

d) examine, study and report to the Minister on such matters, including health screening programs involving the use of x-rays, as the Minister may refer to the Commission for the purpose; and

e) perform such other duties as are assigned to it by or under this or any other Act.

## III. METHOD OF OPERATION

The Commission holds an average of one meeting each month and conducts its business by consensus. When needed, additional formal or informal meetings are held by the Commission, the Chairmen and Members of the six Advisory Committees.

The Commission also routinely receives briefs from special interest groups and individuals; responds to correspondence and general enquiries, or refers these matters to the appropriate Advisory Committee(s); schedules and receives reports from Advisory Committees on issues referred to them; and submits reports and/or recommendations to the Minister of Health.

In order to assist the Commission with safety in relation to irradiation from x-rays, Advisory Committees were established in six broad areas relating to health disciplines. These include Chiropody (Podiatry), Chiropractic Medicine, Dentistry, Medical Radiology, Physics, and Radiological Technology. In this way, the Commission is able to encourage and develop the communications channels necessary to achieve consensus among its Advisory Committees on important issues. Subject to the approval of the Minister, the Commission may establish additional Advisory Committees, as required, for assistance.

The governing bodies and associations for each discipline specified above nominate members to their respective Advisory Committee. The Commission reviews the nominations and appoints Committee members. As the public is well represented by the lay members of the Commission, it is not considered necessary to appoint lay members to Advisory Committees, as Committee's tasks are highly specialized and technical in nature.

The Commission establishes each Committee's quorum and other procedural methods where appropriate; it determines the order of priorities, tasks and deadlines.

Again this year, each Commissioner took special responsibility for an Advisory Committee and attended Committee meetings from time to time to provide additional support and advice.

The Commission welcomes comments and suggestions on its programs and activities. Individuals or special-interest groups, wishing to make a presentation to the Commission on a topic or issue related to x-rays, may write to:

**HEALING ARTS RADIATION PROTECTION COMMISSION**
Project Coordinator
7 Overlea Boulevard, 6th Floor
Toronto, Ontario
M4H 1A8

## IV. SUMMARY OF ACTIVITIES DURING 1988 - 1989

### 1. AMENDMENTS TO REGULATIONS

Amendments to the H.A.R.P. Regulations were completed in March 1989 for submission to the Minister. The proposed amendments had been carefully studied by the Commission's Advisory Committees, the Ministry of Health's X-ray Inspection Service, and the governing bodies and voluntary professional associations representing the radiological community. All of these groups assisted in the development of the proposed amendments.

The proposed amendments will help to clarify the language of the regulations; update the regulations to include new technology, such as the hand held fluoroscopic unit; and add entirely new sections to the regulations. The most significant of these deals with non-dedicated mammography equipment. At present, there is no provision for prohibiting the use of non-dedicated equipment. The Commission has received a great deal of expert advice from the radiological community indicating that this equipment could pose a safety hazard to the patient. The amendments will prohibit the use of non-dedicated equipment for the purposes of mammography.

### 2. IMAGE QUALITY

Efforts to reduce unnecessary radiation exposure in the healing arts has long been a goal of practitioners, professional associations and the Ministry. In radiography, procedures to achieve this goal were developed in the early 1970's, and since then, they have been tested extensively. These procedures are know as "Quality Assurance" (Q.A.).

An extremely important component of a Q.A. program for radiography is image quality testing. In the past year, the Commission has made a special effort to encourage the radiological community to share existing information on image quality testing. This exchange of information (especially between the physicists and other professions), has encouraged the further development of phantoms as an objective method of testing image quality.

The Commission is pleased to report that phantom development and testing, for the purposes of improving image quality, is currently taking place in Chiropractic medicine, podiatry, and mammography.

3. PROMOTION OF X-RAY SAFETY

The Commission has continued to promote excellence in x-ray safety. To this end, representatives of the Commission have addressed meetings of the health professions throughout the province of Ontario. Specifically, speeches and workshops were presented, with significant input from the X-ray Inspection Service, at such meetings and conventions as:

The Ontario Dental Associations Convention held in Toronto, May 1988;

The Ontario Medical Radiological Technologists Association's Meeting held in Windsor, June 1988;

The Ontario Medical Association's Annual Council of Radiology Section Meeting, held in Toronto, June 1988.

These presentations allow members of the Commission and their representatives to promote the idea of excellence in x-ray safety and to obtain feedback from health care practitioners.

## 4. PEER REVIEW

The Commission has built upon its initiative of last year to facilitate the establishment and development of Peer Review systems. Specifically, peer review systems have been developed and put into use for the following disciplines:

### Chiropractic

The Commission's Chiropractic Advisory Committee, in association with the Board of Directors of Chiropractic, has continued its Peer Review Program initiated last year. The Commission has received reports on this work and has been very pleased with the results and the co-operation of all those involved.

### Medical Radiology

The College of Physicians and Surgeons and the Commission's Ad Hoc Peer Review Committee for Medical Radiology completed it's development of a comprehensive On-site Peer Review System. The system will be put into action later in 1989.

### Podiatry

The Podiatry Advisory Committee to the Commission has been instrumental in the development of a peer review system for podiatrists.

Offering encouragement and advice, this committee has helped the Ontario Podiatrists Association and the Board of Regents Chiropody to initiate it's first Peer Reviev assessment of podiatrists.

Radiology Technology

Currently the Radiology Technology Advisory Committee is drafting recommendations for a peer reviev system for Radiology Technologists. The Commission expects that these recommendations will be presented in the next fiscal year.

## 5. UPDATING GUIDELINES

The Guidelines to H.A.R.P. Regulations have been in place now for three years. Thus far they have been very well received by the radiological community.

The Guidelines were designed to assist the reader in understanding the basis of the H.A.R.P. Act and Regulations and the means of compliance. Thus, because of their very nature, the Guidelines often stimulate feedback to the Commission. This feedback often prompts action in terms of updating the Guidelines.

The Commission continues, therefore, to encourage an ongoing reviev of the Guidelines to the Regulations. Suggestions for updates and change to the Guidelines have been gathered from the Commission's Advisory Committee and the radiological community. Suggestions include guidelines for pediatric entrance exposure; protective devices used during radiographic examinations; and film quality.

These recommendations for updates will be studied in detail by the Commission and the Advisory Committees in the upcoming year.

In the meantime, suggestions for updates will continue to be gathered until there is a sufficient number to warrant a reprint of the Guidelines.

## 6. REVIEW THE USE OF THERAPEUTIC X-RAYS

The Commission has in the past concentrated most of its efforts toward the diagnostic use of x-rays. Regulations and related guidelines have been developed and are now in place for this area. Now that this is complete (although review and updating will continue on an ongoing basis), the Commission has begun to focus its attention on the therapeutic use of x-rays.

Suggestions from the Commission's own Radiology Technology Advisory Committee and the Ontario Association of Medical Radiological Technologists, have also prompted the Commission to study the issue of regulations for the therapeutic use of x-rays further. Reports on this issue from the Radiology Technology Advisory Committee and the Medical Radiology Advisory Committee were requested. As a result of these reports, the Commission decided to establish a Radiation Therapy Work Group. This Work Group will be asked to submit their recommendation to the Commission regarding Regulations for Radiation Therapy.

The Commission will seek nominees for the Work Group from organizations such as: The Ontario Cancer Institute; The Ontario Cancer Foundation; The Ontario Association of Medical Radiological Technologists; and the Board of Radiological Technologists. The Commission expects that this Work Group will be established and in operation by July 1989.

## V. MEMBERSHIP OF THE COMMISSION

The Commission, its composition, responsibilities and powers were established under the authority of Section 15 of the Healing Arts Radiation Protection Act. The Commission oversees and coordinates an x-ray safety system for Ontario and represents an active and vigorous effort to serve the public interest in the area of radiation protection and safety.

Members are appointed to the Commission by the Lieutenant Governor's Order in Council for a term up to, but not exceeding, six consecutive years. In order to ensure that the Commission functions independently of the providers of x-ray service and of the government, membership is restricted to lay persons who are not in the public service of the Province and who are not and never have been, members of any governing body or registered health discipline.

The five member Commission is supported by six Advisory Committees.

### Members

| | |
|---|---|
| Gerrard Charette (Chairman) | Windsor |
| Shashi Bhatia (Vice Chairman) | Toronto |
| Nigel Baillie | Toronto |
| Sandra Mark | Ottawa |

## VI. MEMBERSHIP AND MANDATE OF THE ADVISORY COMMITTEES

The six Advisory Committees were established under Section 17 of the H.A.R.P. Act and represent each of the following disciplines:

1. Chiropody (Podiatry)
2. Chiropractic Medicine
3. Dentistry
4. Medical Radiology
5. Physics
6. Radiological Technology

The Committees assist and advise the Commission on:

- educational standards in x-ray safety;
- certification of all operators;
- quality assurance programs required for each class of facility;
- maintenance of appropriate standards for facilities, equipment and operators;
- professional and technological matters related to x-ray safety;
- other matters referred to them by the Commission.

### Members

With the exception of the Physics Advisory Committee, membership on each Advisory Committee consists of at least one representative from both the professional governing body and the voluntary association concerned. In addition, a physicist who has knowledge in matters of diagnostic radiology and is nominated by the Canadian College of Physicists in Medicine, serves on each Committee. These five medical physicists comprise the sixth Advisory Committee.

The following members continued to serve or were appointed by the Commission, during the period this report covers:

## Chiropractic Advisory Committee

| | |
|---|---|
| Dr. Robert Wingfield (Chairman) | Burlington |
| **Dr. Andrew Rainbow (Physicist) | Hamilton |
| Dr. Robert Thurlow | Hamilton |
| *Dr. B. Wilson | Hamilton |

## Dentistry Advisory Committee

| | |
|---|---|
| Dr. George Stirling (Chairman) | Toronto |
| **Mrs. Mary Bondarchuck | St. Catharines |
| Dr. Michael Pharoah | Toronto |
| Dr. Kenneth Povnall | Toronto |
| Dr. John Rowlands (Physicist) | Toronto |

## Medical Radiology Advisory Committee

| | |
|---|---|
| Dr. David Hynes (Chairman) | Toronto |
| Dr. Peter Cockshott | Hamilton |
| Dr. Montague Cohen (Physicist) | Montreal |
| **Dr. I. Hammond | Ottawa |
| Dr. Ted Lansdown | Toronto |
| Dr. Philip Loren | Toronto |
| *Dr. William Mills | Ottawa |
| Dr. C. Rotenberg | Toronto |

## Physics Advisory Committee

| | |
|---|---|
| Dr. Montague Cohen (Chairman) | Montreal |
| Dr. Aaron Fenster | Toronto |
| **Dr. Andrew Rainbow | Hamilton |
| Dr. John Rowlands | Toronto |
| *Dr. B. Wilson | Hamilton |
| Dr. Martin Yaffe | Toronto |

## Chiropody (Podiatry) Advisory Committee

| | |
|---|---|
| Dr. David Weston (Chairman) | Kitchener |
| Dr. Aaron Fenster | London |
| Dr. Robert Goldberg | Willowdale |

## Radiological Technology Advisory Committee

| | |
|---|---|
| Mr. Desmond Barnes (Chairman) | Hamilton |
| Dr. Judith Ash | Toronto |
| Mr. Rick Roberts | Guelph |
| Mr. Terry West | Toronto |
| Dr. Martin Yaffe | Toronto |

* Denotes new member

** Denotes retired member

## VII. GOALS FOR 1989 - 1990

The Commission has established for itself the following list of goals for the 1989 - 1990 year:

1. Establish a Work Group on Radiation Therapy to study the issue of possible regulations and make recommendations to the Commission.

2. Determine the role of the H.A.R.P. Commission in Nuclear Medicine.

3. Develop a comprehensive approach to radiation protection in mammography.

4. Continue to review and update H.A.R.P. legislation, regulations and guidelines to ensure maximum radiation protection for the residents of Ontario.

## VII. ACKNOWLEDGMENTS

The Commission wishes to acknovledge the excellent efforts of its Advisory Committees in assisting the work of the Commission.

Research, development and administrative support was provided to the Commission and its Advisory Committees by:

MINISTRY OF HEALTH

Mr. Joseph Ritchie
Chief
X-ray Inspection Service

Ms. Esther Cox
Project Coordinator
X-ray Inspection Service

Secretarial support was provided by:

Mrs. Pat Rodrigues
Secretary
X-ray Inspection Service

MEDICAL ADVISOR TO THE COMMISSION

Dr. Walter F. Lumsden Toronto